El-Kalyoubia Governorate

El-Obour Educational Zone

St , Joseph's Language School



Sixth Primary

Mathematics Department

First Term

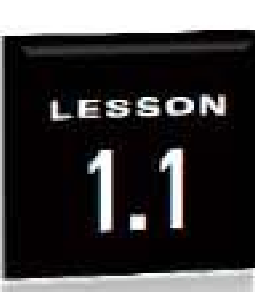


2018 - 2019

Name:........................Class:.............................

We can change the world





The meaning of ratio and its properties

Section 1

Complete each of the following.

a) The ratio between a number and another number = ____________

b) The ratio between the side length of a square and its perimeter is ....

c) 5 : 25 = ... : .... (in the simplest form)

d) – – = ... : ....

e) = ... : ....

f) The ratio between the perimeter of any equilateral triangle and its side length = ... : ....

g) The circumference of the circle: its diameter length = ... : ....

h) The circumference of the circle: its radius length = ... : ....

Section 2

Put each ratio in its simplest form.

i) 30 : 45 = ... : ....

j) 27 : 36 = ... : ....

k) — = ... : ....

Draft



l) 6.4 : 1.6 =

.... : ....

m) 5.25 : 7.375 =

.... : ....

n) 5.5 : 0.22 =

.... : ....

o) – – =

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p) – – =

.... : ....

q) 3.2 **:** – =

.... : ....

r) – – =

.... : ....

s) 5 : 1.25=

.... : ....

t) – –=

.... : ....

Draft

Section 3 Word problems

1)If Karim has L.E. 35 and his sister Marwa has L.E. 70. Find the ratio between what karim has and what Marwa has.

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2)If Khaled has L.E. 15 and Ahmed has L.E. 25,
find the ratio between what Khaled has and what Ahmed has.

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The weights unit:

1 ton = 1000 kg

1 kg = 1000 gm

The money units:

1 pound=100piastres

Units of cultivated lands:

1 feddan = 24 kirats

1 kirats = 24 sahms



Time units:

1 year = 12 months

1 week = 7 days

1 days =24 hours

1hr = 60 minutes

LESSON 1.2

Follow: Properties of ratio

Section 1

Choose the correct answer.

a) The ratio between 12 kirats to – feddans = ... : ....

(12 : 1.5 or 4 : 1 or 1 : 3 or 3 : 1)

b) 125 piastres : 5 pounds = ... : ....

(1 : 5 or 5 : 1 or 1 : 4 or 4 : 1)

c) 3 m. : 30 cm. = ... : .... (1 : 1 or 1 : 10 or 10 : 1 or 1 : 9)

d) 800 gm : 1.6 kg =............ : .... (3:1 or 5 : 1 or 1 : 2 or 1 : 20)

e) If the side length of a square is 4 cm. and the dimensions of a rectangle are 2 and 8 cm, then the ratio between their areas = ... : .... (1 : 4 or 2 : 1 or 1 : 1 or 1 : 2)

Section 2

Put each ratio in its simplest form.

a) 12 kirats : 1feddans

.... : ....

b) 2.5 hours and 75 minutes

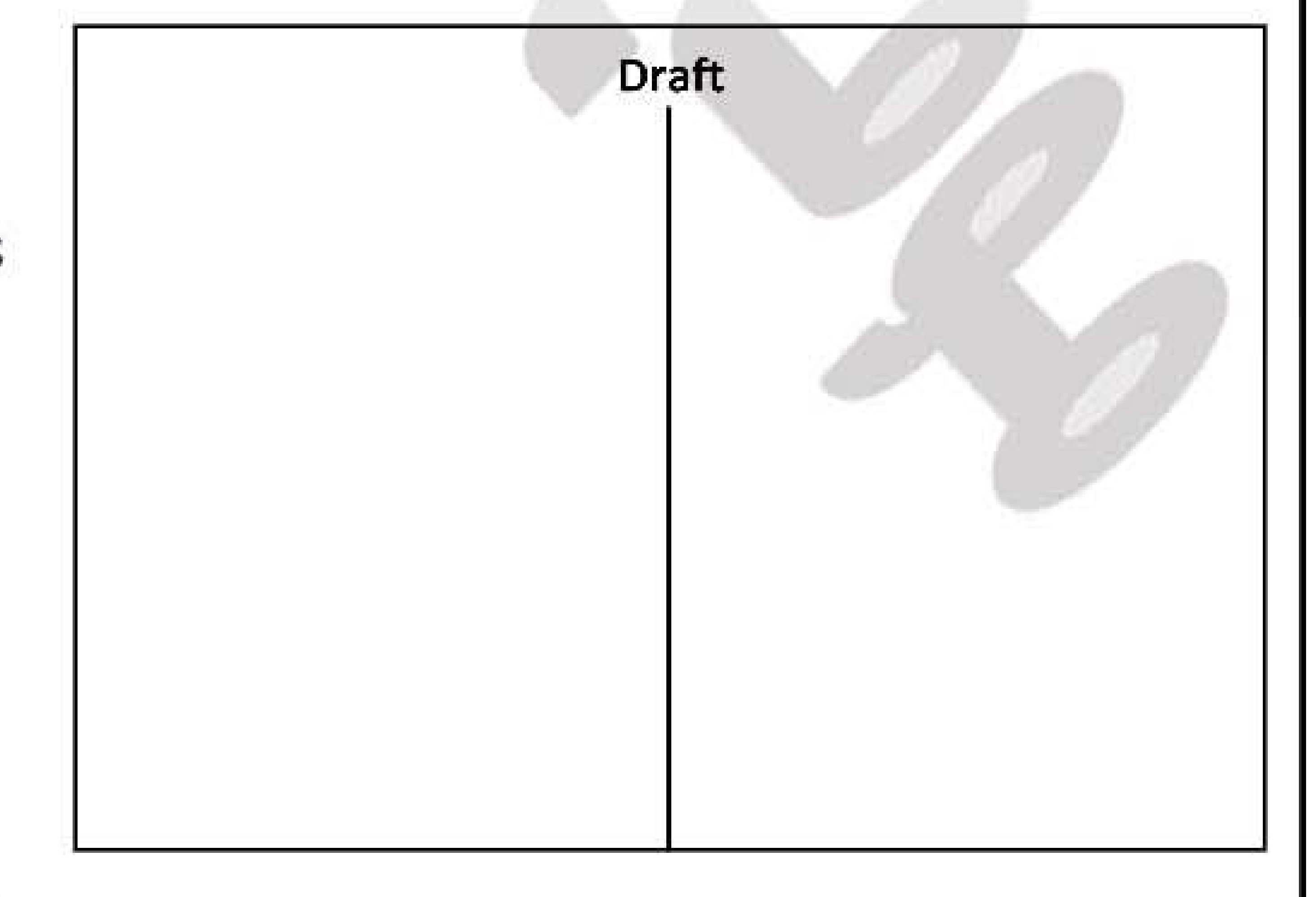
.... : ....

c) 75 kirats and 16 sahms

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d) P.T. 250 and L.E. –

.... : ....



e) 30 kirats : 2.25 feddans
.... : ....

f) P.T. 500 : L.E. 15
.... : ....

g) 5 Kg : 3000 gm
.... : ....

h) – hour : 36 minutes
.... : ....

i)
.... : ....

j) 75 cm and 2.5 m.
.... : ....

Draft

Section 3 Word problems

- The monthly salary of an employee is L.E. 450; he spends L.E. 400 and saves the remainder. Find:

1- The ratio of his expenditure to his salary

2- The ratio of his savings to his expenditure.

3- His savings = ———— of his salary.

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LESSON 1.3

Miscellaneous exercises on ratio and its

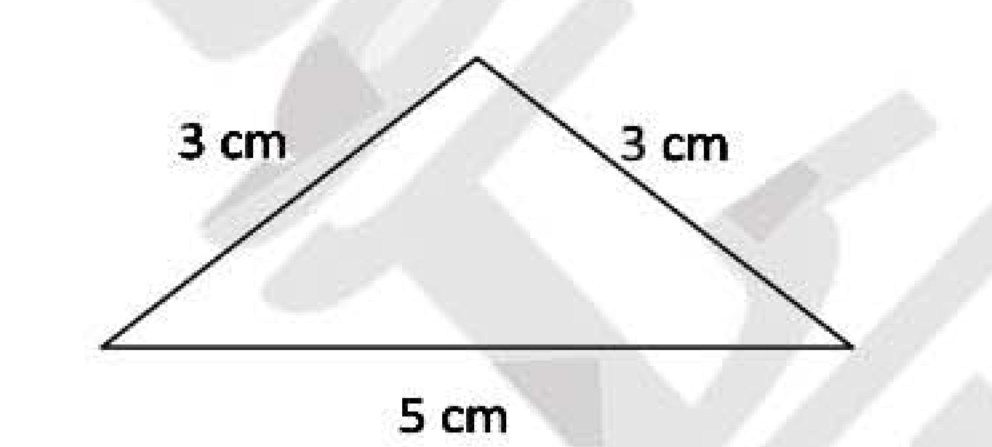
Section 1

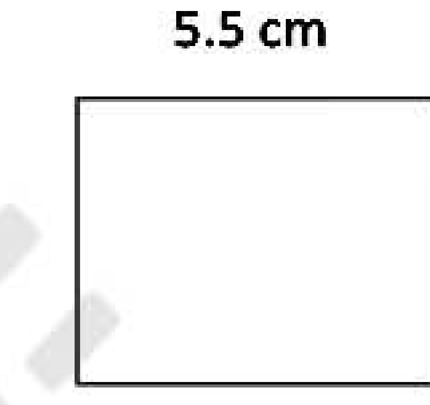
Complete each of the following.

a) If the sum of two numbers is 105 and the ratio between them is 2 : 3,then the biggest one is ....

b) If A : B = 5: 3, and A – B = 8, then A + B = ...

c) In the simplest form, the ratio between the perimeter of the square and the perimeter of the triangle opposite = ... : ....





d) If Akram's weight: Hassan's weight = 5: 8 and Akram's weight is 40 kg, then Hassan's weight equals ....

e) If the ratio between the weight of Hani and the weight of Ahmed is 5: 6 and the weight of Ahmed is 60 kilograms, then the weight of Hani = ...

Section 2

Word problems

1) A primary school has 540 pupils. If the ratio between the number of boys to the number of girls is 4: 5, calculate the number of each of boys and girls.

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2) A rectangular shaped piece of land the ratio between its length and its width is 9: 7. If the difference between the length and the width is 18 meters, calculate each of the length, the width and the perimeter of the land.

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3) The ratio between the heights of two buildings in a town is 4: 7. If the difference between their heights is 9 meters, find the height of each of them.

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4) Two wire pieces, the ratio between their lengths is 5 : 9 if the sum of their lengths is 126 m.
calculate the length of each piece.

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5) A perimeter of rectangle equals 70 cm. and the ratio between its dimensions is 3 : 2. Calculate its area.

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6) The ratio between the length and the width of a rectangle is 9: 5. If the perimeter of the rectangle is 56 meters, find out the length and the width of the rectangle.
Calculate its area.

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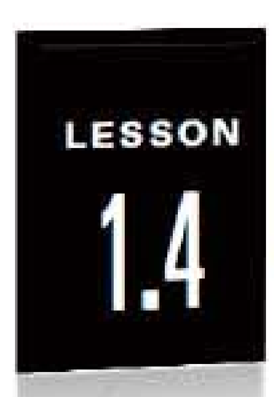
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The ratio among three numbers

Section 1

Complete each of the following.

a) 40: 50: 60 = ... : .... : .... (in its simplest form)

b) 2.4: 1.2: 3.6 = ... : .... : ....

c) 3 m: 200 cm: 10 dm = ... : .... : ....

d) If a: b = 3: 5 and b: c = 5: 7, then a: c = ... : ....

e) If a: b = 2: 3 and b: c = 6 : 7, then a : b : c = ... : .... : ....

f) – – – = 6 : .... : ....

g) – – — = ... : .... : ....

Section 2

Word problems

1) A family consists of three persons. If the father is 1.8 meter tall, the mother is 1.6 meter tall and the son is 1.2 meter tall, calculate the ratio among the three tall.

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2) ABC is a triangle in which AB : BC : CA = 3 : 5 : 7. If the difference between the length of AB and BC is 4 cm., find the lengths of the sides of the triangle and its perimeter.

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3) If the ratio among the share of Hani and the share of Sherif and the share of khaled is 3 : 5 : 7 and if the share of Hani is L.E. 24, calculate the share of each of Sherif and Khaled.

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4) A,B,C are three numbers where the ratio A : B = 4 : 3 and the ratio B : C = 2 : 3. Find the ratio among the three numbers A,B and C.

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5) If the ratio between the measures of the angles of the triangle is 1 : 2 : 3, find the measures of each angle of that triangle.

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6) The number of workers in a factory is 560 workers and the number of women – the number of men. Find the number of each of men and women.

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7) A sum of L.E. 660 was divided among Kamal , Ahmed and Mohamed .If Ahmed's share was – of Kamal's share and Mohamed's share was – of Ahmed's share. Find the share of each one.

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8) An amount of money was distributed among Tarek , Sayed and Sabah in the ratio 2 : 5 : 3. If the Sayed's share is L.E. 45 more than Tarek's share, find the total amount of the money.

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9) A triangular piece of land the ratio between the lengths of its sides is 4 : 6 : 7. If the perimeter of this piece of land is 68 meters, find the lengths of the side of this piece of land.

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9) If Amr's weight, Hamdi's weight and Alaa's weight is 4 : 5 : 7, and Hamdi's weight exceeds Amr, s weight by 12 kg., find the weight of each one of them.

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10) If a = – b and b = – c , find a : b : c

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11) If a:b=2:3 , and b:c = 2:5 , find a:b:c

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12) If x = – y , y = – z , find x : z

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13) If a : b = 3 : 4 , and c : b = 2 : 5 , find c : b : a

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14) If a = 2b and 3c = 4b , find a : b : c

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15) If a = – b , b = – , find a : b : c

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16) If x : y = 3 : 4 , and y : z = 3 : 2 , find x : y : z

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17) If – = – , and – = – , find b : c

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18) If x = – y , and y = z , find x : y : z

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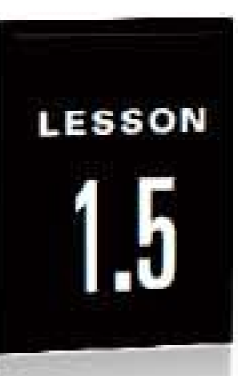
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19) If a = 2b , b = 3c , find a : b : c

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Applications on ratio (Rate)

Section 1

Complete each of the following.

a) An agricultural tractor ploughs 6 feddans in 3 hours, then the rate of performance of tractor = ... Feddans / hour.

b) .... is the ratio between two quantities of different kinds.

c) Machine produces 81 meters of cloth in 3 hours , then the production rate of this machine per hour = ...

d) A factory produces 8000 juice cans in 8 hours, then the productions rate = ...

e) A worker paints a wall of area 100 m^2. at 8 hours , then the rate of work = ... m^2./h

Section 2

Word problems

1) A car covered 150 km. in 3 hours.

calculate the speed of this car.

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2) A plough of agricultural land ploughs 6 feddans within 3 hours. Find the rate of work of this plough. If another plough ploughs 10 feddans within 4 hours, which of them is better than another?

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3) A machine produces 500 m. of textile in two hours.
Find the average production of the machine.
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4) A car consumes 20 litres of petrol for covering 200 km.
Find the rate of consumption.
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5) How many triangles are there in the opposite figure?

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Unit Test

1) Complete each of the following.

a) The ratio is

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b) The rate is

....

c) If a : b = 3 : 5 and b : c = 2 : 3 , then a : c = ... : ....

d) 300 gm : 1.5 kg. = ... : ....

e) The ratio between the side length of a square and its perimeter

= .... : ....

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2) Choose the correct answer.

a) The ratio between what Yasmene and Magda has is 3 : 5 If Magda has L.E. 40 then Yasmene has L.E. ....

(9 or 15 or 24 or 30)

b) The ratio 6 : 18 in its simplest form equals ....

(— or – or – or –)

c) If a car covers 171 km. in – hours , then the average speed of this car = ...km / hour (67 or 76 or 86 or 19)

d) The ratio between circumference of a circle and its diameter length = ...

(2 π : 1 or π : 1 or π : 2 or 1 : 2 π)

e) – : – = ... : ....

(2 : 3 or 1 : 2 or 1 : 3 or 2 : 7)



(3) (a) If the ratio between Omar's money: Ziad's money : Nour's money is 6 : 5 : 2 , and the difference between Omar's money and Nour's money is L.E. 200, find the money with each one of them.

(b) The perimeter of a rectangle is 360 cm. and the ratio between its dimensions is 3: 2. Find its area.

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(4) (a) A piece of wire 30 cm. long is divided into two parts at the ratio of 2 : 3. The smaller part was shaped as a square and the bigger part was shaped as an equilateral triangle. Find the side length of each.

(b) A man divided L.E. 240 among his three sons in the ratio 3 : 2 : 1. Find the share of each one.

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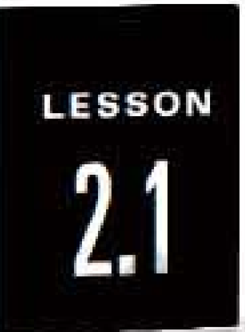
(5) (a) A machine ploughs 6 feddans in 3 hours. Find the rate of performance of this machine. If another machine ploughs 6 kirats in 10 minutes, which of the two machines is better?

(b) A school has 500 pupils; one day 50 pupils were absent.

Find the ratio between absent to present.



Unit Two



The meaning of proportion and its properties

Section 1 — Complete each of the following.

a) .... is an equality of two or more ratios.

b) - = —

c) The product of means = the product of ....

d) If the numbers 7 , 8 , x , 24 are proportional ,then x = ...

e) If —— = 3 , then x = ...

Section 2 — Choose the correct answer

a) If - - , then x = ... (3 or 4 or 1.5 or 6)

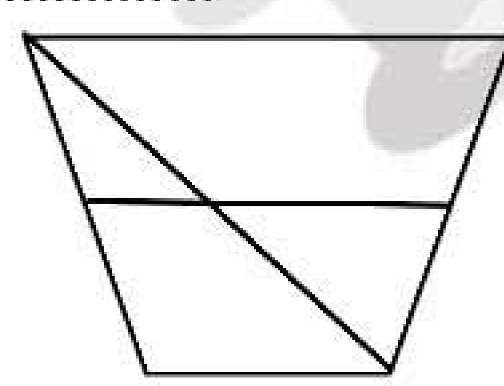
b) If 9 , x , 24 and 32 are proportional quantities, then
x =............ (12 or 15 or 3 or 6)

c) If —— = - , then x = ... (13 or 15 or 8 or 12)

d) The first proportional of ......,10 , 4 , 5 is ....
(4 or 5 or 8 or 9)

e) In the opposite figure, the number of trapezoids is ....

(3 or 4 or 5 or 6)





Section 3 Word problems

1) A car consumes 20 litres of fuel to cover a distance of 180 km.
How many litres are needed to cover a distance of 540 km?
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2) If a worker can paint $21m^2$ in 3.5 hours, then how many square metres the same worker paints in 4.5 hours?
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3) A tractor plughs 15 feddans in 5 hours.
How many feddans does the same tractor plough in 4 hours?
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4) The height of a minaret is 85 meters and the length of its shadow in a moment is 34 m. What is the height of a tree in front of this minaret if the length of its shadow is 17m at the same moment?
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5) Hassan bought 7 kg. of apples , he paid 21 pounds. How much money does he pay to buy 10 kg?

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6) Find x in each of the following proportions

a) – —

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b) – —

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7) Find the missed number (x) for the following numbers to be proportional 6, 8 , 3 , x

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8) Ali bought 5 kg of orange, he paid LE 15 . How much money does he pay to buy 8 kg?

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9) A car consumes 20 litre of petrol for covering 210 km. How many litre of petrol does the car consume to cover 630 km.?

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10) The ratio between Hany's weight to the weight of his father is 3: 5. What is Hany's weight if the weight of his father is 90kg?

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11) A primary school building's height is 14 metre and the shade of this building at a certain moment is 5m length. What is the height of a tree at the same moment if its shade length is 3 metres?

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12) A piece of building land is distributed between two brothers in the ratio 7: 5. If the share of the first one exceeds the share of the second by 80 square meters, find the area of the land and the share of each of the first and the second.

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13) The number of pupils of a primary school in the 1st, the 2nd and the 3rd grades is 240 pupils. If the ratio among the three grades is 5: 4 : 3, calculate the number of pupils in each grade.

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14) A father distributes LE 225 among his three sons. The share of the first was third of the sum and the ratio between the share of the second and the share of the third was 2:3. Find the share of each of them.

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15) For solving the illiteracy problems at a village, 3 classes had been opened. The number of learners was 92 persons. The number of the learner in the 1st class = 2 the number of the learners in the 2nd class and the number of the learners in the 2nd class. = 5 the number of the learners in the 3rd class. Find the number of the learners in each class.

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16) In one of our schools, there are 560 students. If the number of girls = – the number of boys, <u>find each of the number of the boys and the girls.</u>

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17) A fruit seller sells one kilogram of apple for L.E 10

If the ratio between the price of apples to the price of bananas is 5 : 2, <u>find the price of 5 kilograms of banana.</u>

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LESSON 2.2

Drawing scale

Section 1 Complete each of the following.

a) If the drawing length of an object is 2 cm and its real length equals 20 meters, then the drawing scale = ...

b) If the drawing scale is 1 : 200 and the length on drawing is 2.5 cm., then the real length = ... metres

c) If the real length of an insect equals 3 mm. it was photographed by scale 100: 1. The length in the picture = ...cm

d) If the length of a picture of an insect is 4 cm. and its real length is – cm. The drawing scale is ....

e) Drawing scale = ――――――――――

Section 2 Word problems

(1) If the distance of two cities on a map is 10 cm. and the real distance between them is 120 km, find the drawing scale of the map.

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(2) An engineering design for a villa is made. If the height of the fence of the villa in the design is 5 cm.and its real height is 3 m., find the drawing scale.

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(3) Adel took a magnified picture with a camera. If the length of an insect in the picture is 10 cm and its real length is 2 mm, find the drawing scale.

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(4) On a map with a drawing scale 1: 100 000, the length of a driver was 15 cm. Calculate it real length in kilometers.

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(5) If the drawing scale of a map is 1 : 1000 and the length of a road equals 5 km., what is the length of this road in the map?

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(6) Atlas of a number of cities drawn at a scale of 1 : 100 000. If the real distance between two cities is 36 km., find the drawing distance between them in the atlas.

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(7) A photo was taken for one of the every delicate insect by enlargement ratio 100 : 1. If the actual length of the insect length is 0.8 mm., find the length of the insect in the picture.

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(8) The real distance between two towns is 160 km. and the distance between them on a map is 6 cm.

Find the real distance between other two towns if the distance between them is 4.5 cm. on the same map.

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(9) Three maps of El-Fayoum city are drawn such that their scales are 1 : 50 000 , 1 : 40 000 and 1 : 20 000 respectively. If the distance between two villages on the third map is 8 cm, find the distance between the same two villages on each of the other two maps.

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If drawing scale is >1 then it called

Enlargement

If drawing scale is <1 then it called ***Minimization***

LESSON 2.3

Proportional division

Proportional Division:

is to divide anything among a number of people in a given ratio.

(1) Distribute L.E. 200 between Mohamed and Usama in the ratio 3 : 7.

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(2) The number of pupils in a primary school in the 1^{st}, the 2^{nd} and the 3^{rd} grades is 360 pupils. If the ratio among the three persons is 4 : 2 : 3

Calculate the number of pupils in each grade.

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(3) A basket contains apples, oranges and bananas in the ratio 9 : 7 : 3 respectively. If the number of oranges and bananas is equal to 50 ,

find the number of each kind.

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(4) Khaled and Ehab share profits in the ratio 7 : 2 ,
Khaled has L.E. 405 more than Ehab.

Find the share of each one.

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(5) Amr, Omar and Ayman started a commercial. Amr paid L.E.10 000, Omar paid L.E. 8000 and Ayman paid L.E.13 000. At the end of the year, the share of Omar of profit was L.E.1 600.

Find the share of Amr and Ayman.

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(6) Three persons participated in a commercial, the 1st paid L.E.60 000, the 2nd paid L.E.25 000 and the 3rd paid L.E. 20 000. At the end of the year, the profit was L.E.5520.

Calculate the share of each one.

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(7) Three persons participated in a commercial, the 1st paid L.E.60 000, the 2nd paid L.E.80 000 and the 3rd paid L.E.90 000 . At the end of the year, the profit was L.E.20700.

Calculate the share of each one.

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(8) Hoda , Mona and Thanaa participated in a project . Hoda paid L.E. 1500, Mona paid L.E. 2000, Thanaa paid L.E. 2500. At the end of the year, the loss of the project was L.E. 1200.

Find the share of each of them from loss.

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(9) A man died and left a piece of land for building, its area is 17 kirats. We recommended for building an orphan on area equals 5 kirats. The remainder is distributed between his son and his daughter in the ratio 2:1.

Calculate the share of each of them from the land.

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(10) Three persons participated in a commercial, the 1st paid L.E.6 000, the 2nd paid L.E.4 800 and the 3rd paid L.E.7 200. At the end of the year, the profit of the 1st was L.E.240 more than the share of the 2nd.



Calculate the share of each one.

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(11) A man distributed L.E. 6300 between his three sons. If the share of the first was the third of the money and the ratio between the second and the third is 3 : 2, calculate the share of each of them.

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(12) A man died leaving 24 feddans to be distributed among his wife, his son and his daughter. The share of the wife is – of the whole land and the share of the son is twice that of the daughter.

Find the share of the wife, the son and the daughter.

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(13) A load of apple weighs 280 kg. is distributed among three merchants. The share of the 1st = – the share of the 2nd, and the share of the 2nd = $\frac{3}{}$ the share of the 3rd.

Calculate the share of each of them.

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(14) For solving illiteracy problem at a village 3 classes had been opened, the number of learners was 92 persons. If the number of the learners in the 1st class = $\frac{2}{}$ the number of the learners in the 2nd class



and the number of the learners in the 2^{nd} class = $\frac{5}{\ }$ the number of the learners in the 3^{rd} class.

Find the number of the learners in each class.

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(15) There are 980 passengers in a train. If the number of passengers in the first class is – of the number of passengers in the second class and the number of passengers in the second class is – of the number of passengers in the third class,

find the number of passengers in each class.

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(16) A man died leaving 192 feddans to be distributed among his wife, 2 sons and 3 daughters. If the share of the wife is – of the whole land and the share of the son is double of the daughter,

find the share of the wife, the son and the daughter.

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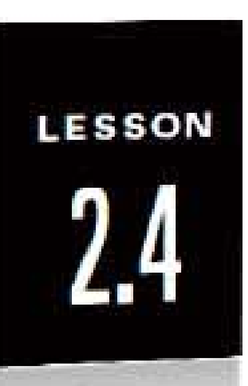
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Percentage and its applications

Section 1

Complete each of the following.

a) 0.625 = ...%
b) 1 - (35% + 47%)=...............%
c) 20% of the number 10 is ....
d) 1 – 25% = ...
e) Percentage is ....
f) 1.5% of 3 km. =...............m.
g) If 25% of a number is 60 , then the number is...............
h) 37– % = ...
i) The price of an electric mixer is L.E. 200, if the discount is 10% of its original price, then its price after discount = L.E...............
j) – – = ...%
k) ( ) =...............
l) ....
m) of 500 Kg. = ... kg.
n) — = ...%
o) The price of an electric mixer is L.E.200, if the discount is 15% of its price, then its price after the discount = L.E...............
p) If 35% of a number is 140, then this number is ....
q) – = ... %
r) There are 50 students in a class, if 5 of them were absent, then the percentage of the attendance is .... %
s) — = ... %
t) – .... = 100%



Section 2

Word problems

1) In a school trip, 12 pupils from 35 pupils in a class have participated.
Find the percentage of participants.

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2) Sara deposited L.E.9000 in a bank the percentage of interest is 11% per year. What is the amount of this sum after one year?

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3) Mostafa deposited L.E. 3000 in a bank with an annual interest of 11 %. Find the total amount after one year.

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4) In one of commercial shops the percentage of the discount on sails is 20 % if Ahmed bought a trouser the price written on it was L.E. 80.
Find what Ahmed paid after the discount.

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5) A trader profited L.E. 480 from certain goods with ratio of 12%.
Find the cost price of the goods.

....

....

....

6) A shopkeeper of cars bought a car for L.E.45 000 then he spent L.E.3000 for repairing it, then he sold it for L.E. 50 000.
Calculate the percentage of profit.

....

....

....

7) A fruit seller bought a load of fruit for L.E.18 000. After buying it, he found a bad part of it because of miss-shopping. He sold the remainder for L.E. 16 000. Find the percentage of his loss.

....

....

....

8) Find the buying price of goods sold for L.E. 21 520 and the percentage of profit is 15%.

....

....

....

9) Heba bought an electric sweeping machine for L.E.220. If the discount is 15 %, calculate the original price of the sweeping machine.

....

....

....

10) A school has 640 pupils , at the end of the year 15% of the number failed find :

a- The number of pupils who failed.

b- The number of pupils who succeeded.

....

....

....

11) A piece of cloth of length 10 m. was put in water and shrank by 4% of its length. Find its length after shrinking.

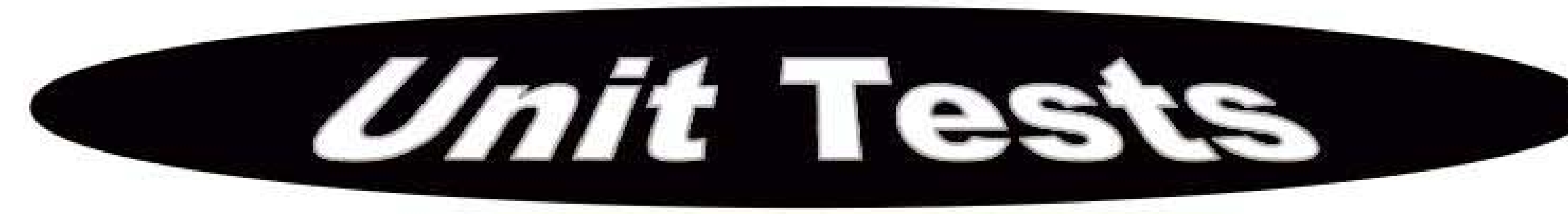
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1) Complete each of the following.

a) If — =– , then x = ...

b) If the length on drawing is 2 cm. and the real length is 6 metres, then the drawing scale is ....

c) — = ... %

d) If 5 (x+2) = 35, then x = ...

e) If a runner covers 600 m. in 4 minutes, then the rate of distance covered in one minute is ....

==

2) Choose the correct answer.

a) The height of a pupil is 120 cm. if its length in the picture 12 cm., then the drawing scale is ......

(1 : 100 or 1 : 10 or 1 : 1000 or 1 :20)

b) In a football match, — from the audience were girls, then its percentage = ...   (8% or 10% or 40% or 16%)

c) The ratio 3: 5 equals the ratio ......

(– : – or – : – or 5 : 3 or 3 : 2)

d) If A: B = 2: 3 and B: C = 12: 7, then A: C = ...

(2 :7 or 3 :7 or 8 : 7 or 3 : 12)

e) 35 % of 400 = ...   (70 or 105 or 140 or 175)

3) (a) Rawan bought an electric device for L.E. 1995 after having a discount 5 %. Find the original price of the device.

(b) ABC is a triangle in which the ratio AB: BC: AC = 4: 4: 5 if the perimeter of the triangle = 39 cm. Find the lengths of its sides.

==

4) (a) A map is drawn with a scale 1: 500000. Find the real distance between two cities in kilometers, given that the map distance is 14 cm.

(b) A man died leaving 192 feddans of land to be distributed among his wife, two sons and three daughters. The share of the wife is – of the whole land and the share of the son is twice that of the daughter. Find the share of wife and the share of each of son and daughter.







1) *Complete each of the following.*

a) 1.75 metre: 150 cm. = ... : ...... in the simplest form

b) If A: B = 5: 6 and B: C = 8: 9, then A: B: C = ... : ...... : ......

c) 35% + 50% + ... = 100%

d) $9 \div 3 + 4 \times 7 - 20 \div 5$ = ...

e) The fourth proportional to the numbers 2, 6, 12 is ......

==

2) *Choose the correct answer.*

a) If — = — , then X = ... (12.5 or 16 or 40 or 24)

b) If the length of diameter of a circle is 14 cm. and π = — , then its circumference = ...

(44 cm. or 22 cm. or 88 cm. or — cm.)

c) If 8, x, 4 and 5 are proportional, then x = ...

(10 or 6 or 12 or 16)

d) If 3 (x+2) = 15, then x = ... (5 or 3 or 6 or 4)

e) If 35% of a number is 140, then the number = ...

(70 or 210 or 400 or 330)

==

3) (a) ***Find the result of : $35 \div 5 - 5 + 3 \times 4$.***

(b) A shopkeeper sells home utensils. He bought a fridge for L.E 1176. Find the percentage of his profit.

==

4) (a) if – (x + 40) = 25 , then find the value of X

(b) A model for a football playground is drawn with a drawing scale 1: 500 the dimensions of the playground in the model are 2 cm. and 4 cm. Find:

(1) The real dimensions of the playground.

(2) The area of this playground in square meters.

Unit Three

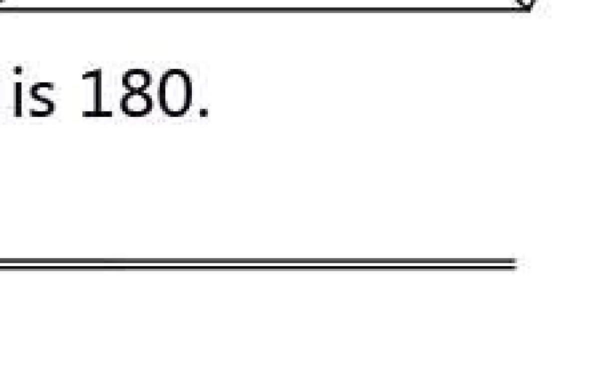
LESSON 3.1

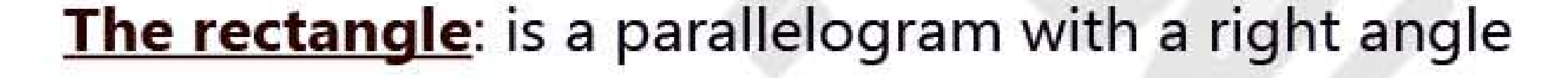
The relations between the geometrical

A parallelogram: is a quadrilateral in which each two opposite sides are parallel

Properties of the parallelogram

- Each two opposite sides are equal in length.
- Each two opposite angles are equal in measure.
- The sum of measures of each two consecutive angles is 180.
- The two diagonals bisect each other.





The rectangle: is a parallelogram with a right angle

Properties of the rectangle

- The four angles of the rectangle are all equal in measure of each is 90°
- The two diagonals of the rectangle are equal in length



The rhombus: is a parallelogram in which two adjacent sides are equal in length.

Properties of the rhombus

- The four sides of the rhombus are equal in length.
- The two diagonals of the rhombus are perpendicular







The square :is a parallelogram with a right angle and two adjacent sides are equal in length.

Properties of the square

- The four sides of the square are equal in length.
- The four angles of the square are equal in measure and the measure of each is 90°.
- The two diagonals of the square are equal in length and perpendicular.

Section 1

Complete each of the following.

a)The four sides are equal in length in each of .... and ....

b) The two diagonals are equal in length in each of .... and ....

c) The two diagonals are perpendicular in each of ....and.......

d) The four angels are right in each of ....and..............

e)The opposite angels are equal in measure in each of .... , ...

,and ....

f) The two diagonals bisect each other in each of............. , ... ,

.... and ....

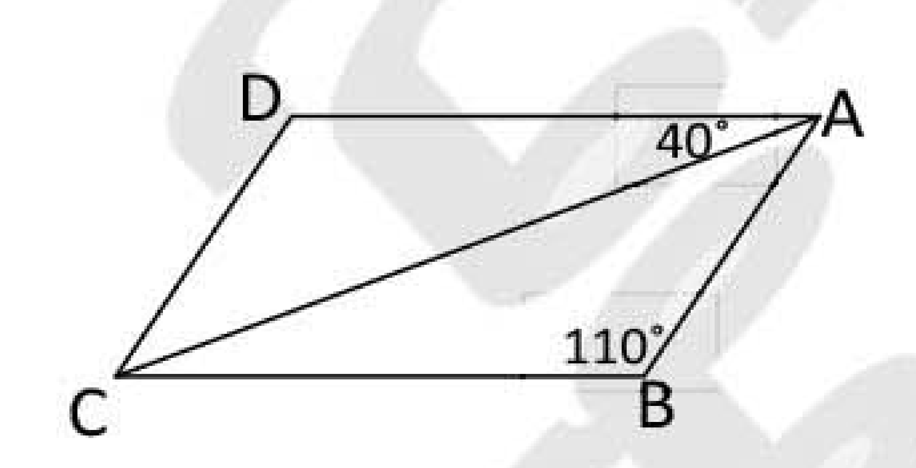
g) The sum of measures of the two consecutive angles equals

180 in each of .... , ... , ... and ....

h)In the parallelogram, the sum of measures of any two

consecutive angles is ....°

1)In the opposite figure :
ABCD is a parallelogram
Find: m (∠D) , m (∠ BAC) and
m (∠ ACD)



LESSON 3.2

The volume of cuboids

Section 1

Complete each of the following.

a)The number of edges of the cuboid is...........

b)The number of vertices of the cube is............

c)The cube has ....faces, each face is a ....and they are all equal in ....

d)The cuboid has............faces, each face is a..........and each two opposite faces are ....in area.

e)The volume of a cuboid = ... × .... × ....

f)The volume of a cuboid = The height × ....

g)The height of a cuboid= .... ÷ ....

h)The volume of a cuboid is 150 cm. and its height is 5 cm, then its base area =.........cm.

i)The volume of a cuboid is 3000 cm and its base area is 300 cm, then its height =.............cm.

j)A cuboid of dimensions 50cm, 80 cm and 1 meter, its volume =..........cm.

k)The volume of a cuboid =120 cm and area of its base =24 cm, then its height =..........cm.



Section 2 Word problems

1)The dimension of a cuboid's base is 25 cm and 20 cm, and the height is 12 cm.

Find a) The area of its base.

b) The volume of the cuboids.

....
....
....
....

2)The sum of cuboid's edges is 72 cm. if the length is 8cm and the width is 6 cm, then

find the volume of that cuboid .

....
....
....
....

3)3600 cubic centimeters of water are poured in a cuboid –shaped vessel, with a square _shaped base of side length 20 cm.

Find the height of water in the vessel.

....
....
....
....

4) A cuboid-shaped aquarium is 6.5 dm. long, 30 cm. wide and 24 cm. height. Find the capacity in litres when it is completely full of water.

....
....
....



5)72 litres of molasses are needed to be put in 25 tins of the same kind, each has a rectangular-shaped base with dimensions 18 cm. and 10 cm. Find the height of the molasses in each tin.

....

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6)The inner dimensions of a cuboid-shaped box are 30cm., 20cm. and 15cm. It is needed to fill it with cuboid-shaped bars of soap with dimensions 6cm, 5cm. and 3cm.

Find the greatest number of soap bars that can be put in the box.

....

....

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7)A box in the shape of cuboid of dimensions 30 cm, 40 cm and 50 cm. If it filled with cubic pieces of sweets of side length 5 cm, find the number of the pieces of sweets.

....

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....

....

8)A cuboid of volume 2128 cm3. Its length is 19 cm. and its height is 14 cm. Find the area of its base and its width.

....

....

....

....

....



9)A box made of cartoon in the shape of cuboid. Its internal dimensions are 50 , 40 , and 30 cm.

How many blocks of soap can be put inside it to be full completely if the dimensions of each block of soap are 8 , 5 and 3 cm.

....

....

....

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10)A building worker used 1500 bricks to build a wall. Calculate the volume of the wall in m^3 if the brick is in the shape of a cuboid whose dimensions 25, 12 and 6cm.

....

....

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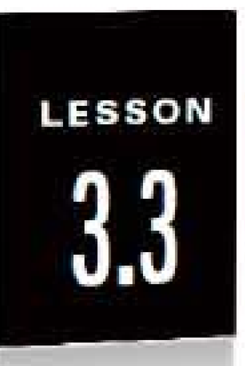
11)8400 cm^3 of water is poured into a vessel in the shape of a cuboid with internal dimensions 20 , 35 and 45 cm. Find

1. The height of water in the vessel.
2. The volume of the water needed to be added for the vessel to be completely filled.

....

....





The volume of cube

Section 1

Complete each of the following.

a) $7600cm^3$. = ... liters.

b) The volume of a cube in which the perimeter of one of its faces is 12cm. equals ....

c) If the sum of the lengths of the edges of a cube is 48 cm. then its total surface area = ...cm^2.

d) The lateral area of cuboid is 140 cm2. and its base dimensions are 2cm,5cm,then its height is ....cm.

e) The sum of the dimensions of a cuboid is 60 cm. and the ratio between them is 2: 5: 8, then its volume is ....cm^3.

Section 2

Choose the correct answer.

a) The number of cubes with edge 5cm. long , that can fill a cuboid-shaped box with inner dimensions 4 dm. , 50 cm. , and 0.6 m. is .... (24000 or 4800 or 960)

b) A cuboid with inner dimensions 2.5m. , 160 cm. , and 1.4dm. , then its capacity is .... litres.(560 or 5600 or 560000)

c) If a cuboid-shaped vessel's capacity = one litre and its base area is 200 cm^2. , then its height = ...cm.(10 or 5 or —).

d) The lateral area of a cuboid whose base is of perimeter 96 cm. and its height is 15 cm. = ...

(1440 cm. or 1440 cm^2 or 1440 cm^3 or 72 cm^2)



Section 3 Word problems

1)Find the volume of a cube of an edge length 4 cm.

....

....

2)Which is greater in volume?

a cuboid with dimensions 6cm. , 8cm. and10 cm. or a cube of edge 8cm?

....

....

....

3)The sum of edges of a cube is 132 cm. Calculate its volume.

....

....

....

4)A metallic cube of edge length 9 cm. it is wanted to be melted and convert it into ingots in the shape of cuboids each of them has the dimensions 3 , 3 and 1 cm.

Calculate the number of ingots that are obtained.

....

....

....

5)The edge of a cube made of clay is 12 cm. long. The cube was cut into small cubes of edges 3 cm. long each.

Find the number of the small cubes.

....

....

....

....



6)A tin in the shape of a cube's internal edge length is 36 cm; it is filled with maize oil. It is wanted to be put in the small tins in the shape of cubes its internal edge length is 9 cm. Find the number of small tins.

……………………………………………………………………………………………

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7)A cube of metal's edge length equals 12 cm. needed to be melted down and converted into alloys in the form of a cuboid with dimensions 3 cm, 4 cm, and 6 cm.

Calculate the number of alloys that can be obtained.

……………………………………………………………………………………………

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8)A cuboid the perimeter of its base equals 36 cm and the ratio between the length and the width of its base equals 3:2
Calculate its volume if the height of it equals 12 cm.

……………………………………………………………………………………………

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9)A swimming pool in the shape of a cuboid whose internal dimensions are 40m, 30m, 1.8m. Find its capacity in litres.

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

10)A box of milk of capacity 2 litres. Another box of capacity 200 milliliters. How many boxes of the second kind are needed to be filled with the milk of the first box completely?

……………………………………………………………………………………………

……………………………………………………………………………………………

Unit Four

Section 1

Complete each of the following.

1) The kinds of statistics data are .... , ...
2) The birth place are .... data.
3) The age is .... data.
4) The range = ... – ....
5) The difference between the minimum and the maximum values of the given data is called ....
6) The range of the values: 6, 3, 10, 7 , 7 , 5 is ....
7) If the marks of 4 students in one of the tests is 27 , 13 , 22 and 30, the range for these marks is ....
8) If the value of a frequency distribution lies between (5 , 35), the range of this distribution = ...
9) If the value of a frequency distribution lie between (20 , 59), the range of this distribution = ...
10) Centre of the set = ...
11) If 63 is the greatest individual of a set and the range = 20, the smallest individual of this set = ...
12) The blood type is .... data.
13) The length is .... data.
14) The difference between the greatest value and the smallest value is called ....
15) If the values of a frequency distribution lie between (10 , 90), then the range is ....



Section 2

Choose the correct answer.

1) The range of the values: 9, 3, 5, 8, 7, 2 is ....

(15 , 7 , 13 , 20)

2) The following data are descriptive except the ....

(Favorite color, birth place, blood species, age)

3) If the value of a frequency distribution lies between (30 and 90), then the range of this distribution = ...

(70 , 60 , 40 , 50)

4) The following data are quantitive except the ....

(age, weight , nationality , tallness)

Section 3

Answer the following questions.

a. The following table shows the number of hours which the pupils of a class spend daily in front of the computer.

Number of hours	1-	2-	3-	4-	5-	6-	Total
Number of pupils	4	12	....	10	6	2	48

1- Complete the table.

2- Represent these data by frequency table.



b. The following table shows the extra money which 100 workers got in a month in a factory, they are as follows:

The extra money	20-	30-	40-	50-	60-	70-	Total
Number of workers	15	....	30	20	10	5	100

1- Complete the table.
2- What is the number of workers who obtained extra money less than 60 pounds?
3- Draw the frequency curve of this distribution.

c. The following table shows the degrees of 100 students in one month in math.

Marks	20-	30-	40-	50-	Sum
Number of students	15	30	40	15	100

1- What is the number of the students who record less than 40 degrees?
2- Draw the frequency curve of this distribution.

d. On the orphan day a group of students donated amounts of money in pounds shown in the following table:

Money in pounds	3-	5-	7-	9-	11-
Number of students	7	10	15	10	8

1- What is the number of the students who record less than 40 degrees?
2- Draw the frequency curve of this distribution.



St , Joseph language School | Math test p6 | Name : ....

1) **Complete each of the following** :-

a) 4.6 liters = ...cm^3

b) If a : b = 4 : 3 and b : c = 2 : 3 , then a : c = ... : ....

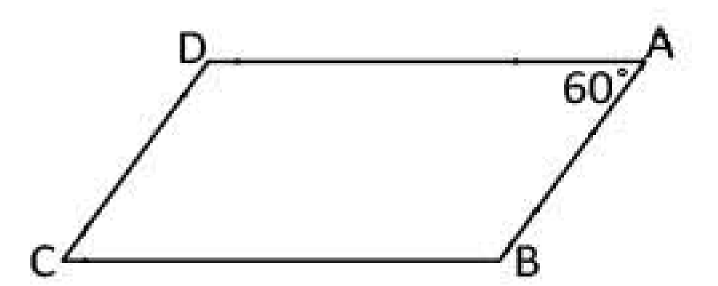
c) If —— , then x = ...

d) If the total area of a cube = $24cm^2$, then its volume = ...cm^3.

e) In the figure opposite : -

ABCD is a parallelogram , m(∠A) = 60°

Then m(∠B) = ...



2) **Choose the correct answer** :-

a) –day : 18 hour = ... : .... (3 : 2 , 4 : 3 , 2 : 3 , 1 : 9)

b) — = ...% (40 , 45 , 60 , 90)

c) If the drawing length = 2cm and the real length = 20 meters then the drawing scale equals ....
(1 : 10 , 1 : 100 , 1 : 1000 , 1 : 10000)

d) The volume of a cuboid whose dimensions are 2cm , 3cm and 5cm = ...cm^3 (10 , 25 , 30 , 50)

e) If the length of a rectangle is 6cm and its area is $24cm^2$, then the ratio between its perimeter and its length is .... (4 : 1 , 3 : 2 , 12 : 5 , 10 : 3)

3)

a) A piece of land in the form of triangle , the ratio between its sides is 4 : 6 : 7 , if the perimeter of this land equal 51 m , Find the length of its sides .

b) A picture was drawn for a garden , with a drawing scale 1 : 100 .if the real length of a tree in the garden is 8meters , what is its length of the picture .

4)

a) A car consumes 20 liters of fuel to cover a distance of 180 km , How many liters are needed to cover 540km.

b) A company for electrical appliances sells the TV set for 2100LE . if the company sold it with percentage 12% profit . Find the buying price of the company for the TV set .

5)

a) A vessel in the shape of a cube the length of the interior edge equal 20cm filled with black honey .

- Calculate the capacity of the vessel of honey
- If the price of honey is 8LE per liter , calculate the price of honey as a whole .

b) The following table shows the ages of visitors of an exhibition in an hour of the day

Age of the visitor	10 -	20-	30-	40-	50-	Total
Number of visitors	6	9	12	10	8	45

1. What is the number of visitors of age 40 years and more .
2. Draw the frequency curve for this distribution .



